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PAIN PERCEPTION AND DEPRESSION IN PATIENTS WITH BREAST CANCER

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ABSTRACT

We studied pain perception and depression in a sample comprising 82 patients with breast cancer. Evaluation was done through standard form with socio-demographic questions. Relation between depression, McGill Pain Questionnaire, VAS and BDI corresponded to p >0.183. BDI related to quality of sleep with p = 0.036, the highest BDI being related to insomnia. Black and par do (brown-skinned) races revealed p < 0.05 in the McGill Pain Questionnaire for the affective, miscellaneous and total dimensions.

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INTRODUCTION

One of the aspects observed in patients with neoplasia is the pain that causes human suffering, gives rise to disabilities, and compromises quality of life. In spite of important advances in neurophysiologic studies on pain and improvement in diagnostic methods and procedures, current therapeutic approaches hardly ever result in complete resolution of symptoms. That being so, people found with this symptom continue to live with some level of pain-related discomfort, regardless of the treatment received (TURK; WILSON; CAHANA, 2011). As for its origin, chronic pain has been referred to as that with no biological value, with duration greater than the typical curing time andnon-responsive to treatments based on specific drugs. Chronic oncological pain is among the most important symptoms in terms of prevalence and potential consequences. Integration of the best practices for its control, in order to make them efficient and accessible in the treatment, is still a challenge. Cancer-related complaints are constantly increasing, whereas more people are able to overcome the disease. Depressive symptoms constitute complications of the disease, but they are frequently underestimated. Diagnostic criteria include affective/cognitive factors and somatic symptoms (TOBIAS *et al.,* 2017).

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Beck Depression Inventory (BDI) is an instrument that meets the purpose of assessing depression. In patients with cancer, BDI was applied to adolescents, patients with head and neck neoplasia receiving radiotherapic treatment, and women with breast cancer undergoing psychotherapy (GANDINI *et al.,* 2007). One of the methods to assess QL is through self-report screening. It was found that one quarter to one third of patients with breast cancer report suffering, anxiety and depression. Risk factors for psychosocial suffering and lower levels of QL include less personal resources, poorly adapted coping strategies, poor physical symptoms control, absence of social support, previous psychiatric medical history, poor-quality doctor-patient communication and lower schooling levels. They are also found to be related to people of intermediate age or younger(MEHNERT; KOCH, 2007).Until recently, methods utilized for measuring pain included the use of single dimension scales, namely the visual analogue scale (VAS), numeric rating scale and verbal rating scale. When evaluating the existing symptoms in these patients, a more detailed evaluation becomes necessary. Considering pain as a multifactorial phenomenon, MELZACK (1975) developed the "McGill Pain Questionnaire", an instrument used to assess other characteristics of pain besides intensity. There are few studies in the literature that correlate breast neoplasia with algic symptomatology associated with depression.

MATERIALS AND METHODS

The research was carried out at the Dr. Alfredo Abraão Cancer Hospital in Campo Grande-MS/Brazil, during January-July 2017. Records corresponding to ICD-10 C50 (malignant breast neoplasia) were collected and divided into two groups: patients with histopathological diagnosis of breast cancer and depression (G1) and patients with breast neoplasia without depression (G2). In total, 82 patients were evaluated. All participants signed the necessary Informed Consent Form. Comparison between non-depressed patients and those depressed, in relation to scores in different dimensions of the McGill Pain Questionnaire, visual analogue scale scores and Beck scale scores, were carried out by means of the Mann-Whitney non-parametric test. Comparisons between different ratings of quality of sleep and between different races, in relation to scores in different dimensions of the McGill Pain Questionnaire, as well as visual analogue scale scores and Beck scale scores, were carried out by means of the Kruskal-Wallis test, followed by Dunn's post-test for multiple comparisons. Evaluation of linear correlation between quantitative variables was carried out by means of the Spearman linear correlation test.

Table 1. Socio-demographic profile and Beck Depression Inventory value (n = 82)

Variable(between minimum and maximum)	Profile Parameters (%)
Age (Between 32 and 85 years old)	57.96±1.34[x)]
Race	
White	41.5 (34)
Pardo	36.6 (30)
Black	22.0 (18)
Family income(between R$600.00 and 15,000.00)	2092.28±207.10[x)]
Dependents(between 1 and 5 dependents)	2.38±0.13[x)]
Income Classification	
Low-income	56.1 (46)
Middle-income	28.0 (23)
High-income	15.8 (13)
Children(between 0 and 9 children)	2.52±0.19
Civil Status	
Married	23.2 (19)
Stable Union	12.2 (10)
Single	17.1 (14)
Separated	28.0 (23)
Widowed	19.5 (16)
Education	
Illiterate	9.8 (8)
Complete Primary School	6.1 (5)
IncompletePrimary School	36.6 (30)
Complete Secondary School	22.0 (18)
Incomplete Secondary School	7.3 (6)
Complete Higher Education	9.8 (8)
Incomplete Higher Education	7.3 (6)
Post-Graduation	1.2 (1)
Health Classification	
Very bad	2.4 (2)
Bad	13.4 (11)
Neither good nor bad	23.2 (19)
Good	48.8 (40)
Very good	12.2 (10)
Depression	
No	76.8 (63)
Yes	23.2 (19)
Loneliness Frequency	
Never	20.7 (17)
Hardly ever	31.7 (26)
Sometimes	32.9 (27)
Many times	4.9 (4)
Always	9.8 (8)
BDI(between 0 and 42 points)	11.48±0.91[x)]

[x)]Average±SD

The other results were presented in the form of descriptive statistics or in tables and graphs. Statistical analysis was carried out considering a significance level of 5%.

RESULTS

Table 1 demonstrates socio-demographic profile and detailed Beck inventory. Table 2 demonstrates patient's pain profile and concomitant symptoms.

Table 2. Patient's pain profile (n=82)

Variable	Mean±SEMor % (n)
Analgesic Use	
No	53.7 (44)
Yes(n=38)	46.3 (38)
Type of analgesic	
Non-opioid	73.7 (28)
Opioid	26.3 (10)
Dimension of the McGill Pain Questionnaire (points)	
Sensory (between 0 and 34)	17.88±0.96
Affective (between 0 and 14)	5.05±0.48
Evaluative (between 0 and 5)	2.67±0.19
Miscellaneous (between 0 and 14)	6.73±0.48
Total (between 0 and 65)	32.33±1.85
Current Pain Intensity(between 0 and 5)	2.34± 0.15
Current Pain Intensity	
No pain	7.3 (6)
Mild	20.7 (17)
Agonizing	14.6 (12)
Horrible	14.6 (12)
Excruciating	8.5 (7)
Pain Location	
Right breast	23.2 (19)
Left breast	18.3 (15)
Lumbar region	9.8 (8)
Other	48.78 (40)
Pain Frequency	
None	7.3 (6)
Brief	26.8 (22)
Periodic	50.0 (41)
Constant	15.9 (22)
Concomitant Symptoms	
Yes	31.7 (26)
No	68.3 (56)
Concomitant Symptoms (n=26)	
Headache	46.2 (12)
Dizziness	34.6 (9)
Nausea	19.2 (5)
Constipation	7.7 (2)
Diarrhea	7.7 (2)
Somnolence	3.8 (1)
Quality of Sleep	
Insomnia	30.5 (25)
Discontinuous	17.1 (14)
Good	52.4 (43)
Ingestion of food	
Some	4.9 (4)
Little	11.0(9)
Good	84.1 (69)
Physical Activity	
None	62.2 (51)
Little	17.1 (14)
Some	12.2 (10)
Good	8.5 (7)
VAS(between 0 and 10)	5.71±0.32

Table 3 demonstrates the relation between depression, the McGill pain questionnaire, VAS and BDI. One can observe from Table 4 that the BDI value of 14.08 with SD of 1.56 relates to sleep profile "insomnia", while the value of 9.51 with SD of 1.16 corresponds to sleep profile "good". There was statistical significance in the bilateral analysis between BDI and quality of sleep. A more delineated statistical analysis through Dunn's post-test showed that insomnia correlated with

higher BDI (higher depression), whereas lower BDI corresponded to good sleep, and therefore less depression. No relation was observed between quality of sleep and dimensions of McGill, nor quality of sleep and VAS.

Table 3. Correlation between Depression and McGill Pain Questionnaire, VAS and BDI

Variable	Depression		P
	No	Yes	
Dimension of the McGill questionnaire			
Sensory	17.16±1.11	20.26±1.85	0.208
Affective	4.75±0.54	6.05±1.03	0.194
Evaluative	2.59±0.22	2.95±0.42	0.391
Miscellaneous	6.46±0.55	7.63±0.97	0.279
Total	30.95±2.11	36.89±3.76	0.183
Visual analogue scale	5.51±0.38	6.38±0.49	0.342
BDI	10.97±0.98	9.65±2.21	0.324

Table 4. Relation between quality of sleep and McGill Questionnaire, VAS and BDI

Variable	Quality of sleep			P
	Insomnia	Discontinuous	Good	
Dimensions of the McGill pain questionnaire				
Sensory	20.84±1.51	15.00±2.53	17.09±1.34	0.116
Affective	6.20±0.92	4.07±1.23	4.70±0.61	0.251
Evaluative	3.32±0.33	2.29±0.46	2.42±0.26	0.074
Miscellaneous	7.88±0.82	5.21±1.30	6.56±0.65	0.162
Total	38.24±3.08	26.57±4.51	30.77±2.56	0.061
VAS	6.66±0.57	5.74±0.88	5.15±0.40	0.063
BDI	14.08±1.56[a]	12.86±2.64ab	9.51±1.16b	0.036

When evaluating Table 5, which makes an analysis between races and the McGill Pain Questionnaire, VAS and BDI, one can infer that the black/pardo races have statistical significance ($p< 0.05$) with the McGill Pain Questionnaire in the affective, miscellaneous and total dimensions, but this relation is not verified with the white race. Statistical relation between races and VAS or races and BDI is not observed.

Table 5. Relation between race and the McGill Pain Questionnaire, VAS and BDI

Variable	Race			P
	White	Black	Pardo	
Dimension of the McGill questionnaire				
Sensory	16.21±1.52	5.94±2.16	20.93±1.38	0.103
Affective	5.26±0.81ab	3.00±0.87b	6.03±0.70[a]	0.049
Evaluative	2.47±0.34	2.17±0.36	3.20±0.25	0.100
Miscellaneous	5.91±0.81ab	5.28±0.96b	8.53±0.65[a]	0.022
Total	29.85±3.10ab	26.39±3.98b	38.70±2.40[a]	0.032
VAS	5.56±0.55	4.76±0.69	6.46±0.41	0.163
BDI	12.68±1.63	11.39±1.64	10.17±1.36	0.605

Data are presented in mean±standard error of the mean, with p value found in the Kruskal-Wallis test.

Table 6. Linear correlation between BDI and other variables

Correlation	P	R
Dimension of the McGillPain Questionnaire		
Sensory	0.003	0.325
Affective	0.002	0.343
Evaluative	0.027	0.244
Miscellaneous	0.003	0.327
Total	0.002	0.344
Age	0.018	0.261
Visual analogue scale	0.001	0.360

P- value as per Spearman linear correlation test.
R- linear correlation coefficient.

The different letters in the lines indicate meaningful differences between different races (Dunn's post-test, $p<0.05$).

Table 6 exposes analysis between BDI and the McGill pain questionnaire, age and VAS variables. Table 7 shows the relationship between VAS and the McGill Pain Questionnaire and age. It is evident that there is meaningful statistical relation, with $p<0.001$ between VAS and all dimensions of McGill, whereas in the "total" dimension, linear correlation coefficient is rather high. But when VAS is assessed with the variable of age, there is no such statistical correlation, since p value is 0.680 and linear correlation coefficient is negative.

Table 7. Linear correlation between VAS and other variables

Correlation	P	R
Dimensions of the McGill pain questionnaire		
Sensory	<0.001	0.620
Affective	<0.001	0.687
Evaluative	<0.001	0.643
Miscellaneous	<0.001	0.636
Total	<0.001	0.729
Age	0.680	-0.046

P- value as per Spearman linear correlation test.
R- linear correlation coefficient.

Figure 1 presents the correlation between total score of McGill Pain Questionnaire and VAS, each symbol representing both scores for a sole patient. P value is that of the Spearman linear correlation test, whereas r value is the linear correlation coefficient.

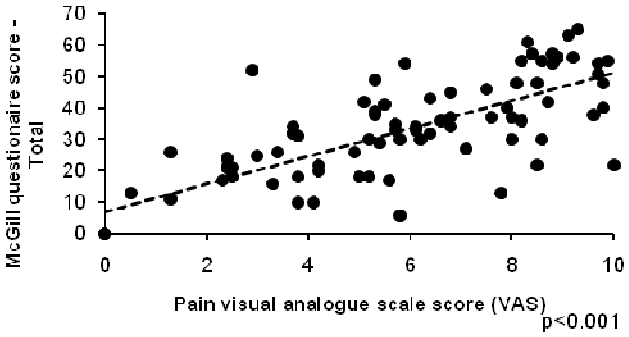

Figure 1. Scatter plot illustrating positive linear correlation between VAS score and MPQ total score.

Evaluation between age and the McGill Pain Questionnaire is given in Table 8.

Table 8. Linear correlation between age and other variables

Correlation	P	R
Dimensionof theMcGillPain Questionnaire		
Sensory	0.368	-0.101
Affective	0.972	-0.004
Evaluative	0.195	-0.145
Miscellaneous	0.864	-0.019
Total	0.478	-0.079

P- value as per Spearman linear correlation test.
R- linear correlation coefficient.

DISCUSSION

In this research, results pertaining to 82 participants were analyzed through the McGill Pain Questionnaire, VAS, BDI, along with a socio-demographic questionnaire. Presence of depression in the socio-demographic questionnaire was 23.2%, a percentage that is very similar to the one found by CANGUSSU *et al.* (2010), who assessed symptoms of depression through BDI in its short form, detecting the prevalence of 29.6%. In this study, depressive symptoms were

more frequent in women that reported pain and/or hindered upper limb movements.BDI of 11.48 was found in the present study, corresponding to mild and moderate depression. BDI found by the study of Tojal and Costa (2015) corresponded to "moderate" and "severe" depression. The cross-referencing of depression and the variables of McGill Pain Questionnaire, VAS and BDI shows no statistically significant correlation. Mansano-Schlosser and Ceolim, 2007, assessed quality of sleep along with clinical evolution of patient with breast cancer, finding that poor quality of sleep was related to poor prognosis. Our study shows that quality of sleep is related to BDI, and patients with worse sleep demonstrate higher depression index. According to the consensus reached by Watson e*t al.*, 2015, the daily recommendation of sleep for an adult is 7 hours per night. Lower quantity of sleep relates to diverse pathologies, namely diabetes, hypertension, cardiovascular disease and cancer. It also relates todeath risk and may compromise the individual's immune function. Grandner's (2017) paper reaffirmed the importance of sleep in quality of life and prevention of diseases by demonstrating that patients who slept less than 6 hours presented higher mortality and susceptibility for chronic diseases. As per analysis of Girschik, Heyworth and Fritschi (2013), there are two mechanisms that can justify the relation between breast cancer and bad sleep. The first is involvement of immune function and metabolic pathways that lead to obesity, and the second, an indirect mechanism that suggests neoplasia relationship with melatonin release. However, the true process by which sleep would influence risk of cancer still remains unknown. The study carried out by these authors sought to assess influence of sleep as for the risk of developing breast cancer, though there was no association between sleep self-report, subjective quality, duration of sleep or combination of quality and duration of sleep with increased risk of breast neoplasia. Taking into account data presented in Table 5, which evaluate the relationship between different races and the McGill Pain Questionnaire, VAS and BDI, it becomes evident that people of brown-skinned (pardo) race reveal more changes in the "affective", "miscellaneous" and "total" dimensions, when compared to the black race; hence, the greater number of complaints corresponding to these dimensions. However, there are no signs that this occurs in people of white race. As for analysis of the variables of McGill Pain Questionnaire, age and VAS in relation to BDI, on the basis of data presented in Table 6, one can observe statistical significance in the relationship between BDI and other parameters. However, calculation of correlation coefficients leads to values that do not exceed 0.4, indicating a weak interdependence. When analyzing interrelation between VAS and dimensions of McGill, it is clear that there is statistical dependence between all dimensions, with a strong linear correlation for the "total" dimension, and moderate for the others. However, there was no correlation between VAS and patients' age. If such a connection existed, it would be inversely proportional.

Conclusion

It is concluded that there is no statistical correlation between depression, McGill Pain Questionnaire, VAS and BDI. It is possible to affirm that participants with insomnia have higher scores in BDI than those with good sleep, although we cannot conjecture if depression worsened sleep or if poor sleepers were more susceptible to depression. It was shown that brown-skinned (pardo) people are more susceptible to affective changes in the McGill Pain Questionnaire. Pain is multifaceted, so the sole fact of being pardo would not predispose to affective changes. Consequently, more research is needed in this field. There was a weak correlation between BDI and the variables of McGill Pain Questionnaire, age and VAS, demonstrating that somehow the sphere of depression is influenced by pain dimension profile, age group and pain intensity. It is concluded that there is no correlation between VAS and age, nor between the age factor and the McGill Pain Questionnaire. The most meaningful data was the finding of a strong correlation between the dimensions of the McGill Pain Questionnaire and VAS, which suggests that pain analysis can be improved and enhancedby using both scales.

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